
Clearing trunk faults

Symptoms:

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Trunk faults

Trunk cards provide the interface between the peripheral equipment buffer and various trunk facilities. This chapter specifically considers two types of trunk cards:

- E&M trunk card: provides four analog trunks, each of which can be individually configured to operate as:
 - E&M signaling trunk
 - Two-wire tie trunk
 - Two-wire tie trunk Type V (BPO)
 - DC-5 trunk
 - 2280 Hz tie trunk
 - Four-wire tie trunk
 - Four-wire tie trunk type V (BPO)
 - Four-wire tie trunk type C2 Earth-off Idle
 - Paging trunk
- universal trunk card: provides eight trunks, each of which can be individually configured to operate as:
 - Central Office (CO) trunk
 - Direct Inward Dialing (DID) trunk
 - Two-way tie, Dial Repeating (2DR)
 - Two-way tie, Outgoing Automatic Incoming Dial (OAID) trunk
 - Outgoing Automatic Number Identification (OANI) trunk
 - Recorded Announcement (RAN) trunk
 - Music trunk
 - Paging trunk

- Direct Inward Dial Trunk: Provides eight trunks. The signaling supported depends on the country of operation, and can include:
 - Direct Inward Dialing (DID) trunk
 - Two-way Dial Repeating (2DR)
 - Outgoing Automatic Number Identification
 - Music On Hold Equipment
- Central Office Trunk: Provides eight trunks. The signaling supported depends on the country of operation, and can include:
 - Ground Start
 - Loop Start
 - A-type signaling
 - Loop Start Disconnect Clearing
 - Loop Start Guarded Clearing

Trunk faults can cause problems (such as noise) on outside calls and can keep calls from coming in or going out.

Fault clearing procedures

Manual continuity tests can be used to isolate superloop network card and IPE faults. For a description of manual continuity tests, see *Meridian 1 general maintenance information* (553-3001-500). See “LD45” in the *X11 input/output guide* for details on performing the tests.

Table 12 lists common trunk fault indications. To clear faults, select the symptom that most resembles the fault indications and go through the procedure for clearing each possible cause until the fault is fixed. Once the fault is corrected, disregard the remaining possible causes.

Note: Clear any power or common equipment faults before you try to clear telephone faults.

If the fault is not cleared after you have gone through each possible cause, check the most recent fault indications. Also check “How to clear faults” on page 3 to see if another type of fault is indicated.

After the fault is corrected, go to “Final maintenance procedure” on page 177 to completely restore normal operation.

Table 12
Trunk fault indicators

Indicator	Possible indications
System messages	ERR090, 220, 270 OVD003, 008, 009, 010 TRK messages
Visual indicators	Red LED lit on trunk card
User reports	Users have trouble with a specific trunk Callers report continuous ringing Trouble with calls on console and/or telephones

WARNING

Module covers are *not* hinged; do *not* let go of the cover. Lift the cover away from the module and set it out of your work area.

Symptom:

Trunk cannot make or receive calls (OVD message received)

You cannot make or receive calls over a trunk and an overload (OVD) system message is received. The message indicates that only the TN for this trunk has been disabled. Look up all system messages and maintenance display codes in the *X11 system messages guide* and follow the instructions given. If the fault does not clear, use this procedure.

Manual continuity loopback tests can be used to isolate faults to IPE, such as E&M and universal trunk cards. See “LD45” in the *X11 input/output guide* for details on performing the tests.

Note: Continually observe and look up system messages as you perform this procedure.

Replace equipment as described in *Meridian 1 hardware replacement* (553-3001-520). You may need to replace one of the following:

- E&M trunk card: NT8D15 NT5K19, NT5K72, NT5K83
- Universal trunk card: NT8D14, NT5K07
- Central office trunk card: NT5K18, NT5K70, NT5K71, NT5K82, NT5K90, NT5K93, NT5K99, NTAG03, NTCK16
- Direct Inward Dial trunk card: NT5K17, NT5K36, NT5K84
- Any other trunk card
- Conference/TDS card: NT8D17
- DTR card: NT8D16
- Tone Detector card: NT5K20, NT5K48
- Network/DTR card: NT8D18
- Trunk equipment (such as music source or paging equipment)
- PE or IPE card cage: NT8D1303, NT8D3703

Possible cause	Action
Defective trunk card	If the indicated card is an E&M or universal trunk card, unseat, then reinstall, the card to initiate a self-test. If the test fails, replace the card. If the test passes, follow the procedure below. Disconnect the wiring between the card and the cross-connect terminal. Enable the TN by entering: LD 32 ENLU I s c u "I s c u" represents loop, shelf, card, and unit numbers. Wait for an OVD message. If you receive an OVD message, replace the card. If you do not receive an OVD message, reconnect the wiring and go to the next possible cause.
Defective wiring	At the main cross-connect terminal, disconnect the wiring to the CO or other trunk equipment (such as a music source or paging equipment). Enable the TN and wait for an OVD message. If you receive an OVD message, repair or replace the wiring to the PE shelf. If there is no OVD message, repair or replace the wiring from the cross-connect terminal to the telephone. If the trunk card still will not enable or there is still a trunk problem, reconnect the wiring and go to the next possible cause.
Defective trunk equipment	Make sure the CO equipment or other trunk equipment is not defective. If there is no problem with this equipment, go to the next possible cause.
Defective DTR, TDS, or MFS	Use the attendant console to seize trunks and audibly test for dial tone and outpulsing, or use a maintenance telephone and enter: LD 36 TRK I s c u Note: See the <i>X11 input/output guide</i> for information on using this test. If you do not hear outpulsing, the digitone receiver, tone and digit switch, or multifrequency sender may not be sending or receiving digits and the fault will affect more than one trunk. See the procedures for clearing faults on this equipment. If there is no problem with this equipment, go to the next possible cause.

(continued)

Possible cause	Action
Defective PE shelf	Unseat the affected trunk card and enable the TN. If you do not receive an OVD message, test superloop TNs by entering: LD 30 UNTT I s c u Test TNs on other loops by entering: LD 45 TEST If you receive an OVD message, replace the card cage assembly in the module.

Symptom:
Trunk cannot make or receive calls (no OVD message)

You cannot make or receive calls over a trunk, but there is no overload (OVD) or other system message showing that the TN for this trunk is defective or has been disabled. Look up all system messages and maintenance display codes in the *X11 system messages guide* and follow the instructions given. If the fault does not clear, use this procedure.

Manual continuity loopback tests can be used to isolate faults to IPE, such as E&M and universal trunk cards. See “LD 45” the *X11 input/output guide* for details on performing the tests.

Note: Continually observe and look up system messages as you perform this procedure.

Replace equipment as described in *Meridian 1 hardware replacement* (553-3001-520). You may need to replace one of the following:

- E&M trunk card: NT8D15, NT5K19, NT5K72, NT5K83
- Universal trunk card: NT8D14, NT5K07
- Central office trunk card: NT5K18, NT5K70, NT5K71, NT5K82, NT5K90, NT5K93, NT5K99, NTAG03, NTCK16
- Direct Inward Dial trunk card: NT5K17, NT5K36, NT5K84
- Any other trunk card
- Conference/TDS card: NT8D17
- DTR card: NT8D16
- Tone Detector card: NT5K20, NT5K48
- Network/DTR card: NT8D18
- Trunk equipment (such as music source or paging equipment)

Possible cause	Action
Defective trunk equipment	Make sure the CO equipment or other trunk equipment is not defective. If there is no problem with this equipment, go to the next possible cause.

(continued)

Possible cause	Action
Disabled or defective TN	Test TNs on superloops by entering: LD 30 UNTT l s c u "l s c u" represents loop, shelf, card, and unit numbers. Test TNs on other loops by entering: LD 45 TEST If the test fails, replace the indicated item and test again.
Defective trunk card	If the card is an E&M or universal trunk card, unseat, then reinstall the card to initiate a self-test. If the test fails, replace the card. If the test passes, go to the next possible cause.
Defective wiring	At the main cross-connect terminal, disconnect the wiring to the CO or other trunk equipment. Enable the TN and wait for an OVD message. If you receive an OVD message, repair or replace the wiring to the PE shelf. If there is no OVD message, repair or replace the wiring from the cross-connect terminal to the telephone. If the trunk card still will not enable or there is still a trunk problem, reconnect the wiring and go to the next possible cause.
Defective DTR, TDS, or MFS	Use the attendant console to seize trunks and audibly test for dial tone and outpulsing, or use a maintenance telephone and enter: LD 36 TRK l s c u Note: See the <i>X11 input/output guide</i> for information on using this test. If you do not hear outpulsing, the digitone receiver, tone and digit switch, or multifrequency sender may not be sending or receiving digits and the fault will affect more than one trunk. See the procedures for clearing faults on this equipment. If there is no problem with this equipment, go to the next possible cause.
Excessive traffic in the system	Additional trunk cards may be required to handle the traffic in the system. See <i>Traffic measurement formats and output</i> (553-2001-450).